

CLAIMS

What is claimed is:

1. A fibrous material comprised of a binder fiber adhered to a functional fiber,
5 wherein the binder fiber is a staple bicomponent fiber oriented in substantially the same direction as the functional fiber.
2. The material according to claim 1, wherein the functional fiber is a staple or continuous fiber.
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3. The material according to claim 1, wherein the binder fiber is a bicomponent fiber made of the following pairs of polymers: polypropylene/polyethylene terephthalate (PET); polyethylene/PET; polypropylene/Nylon-6; Nylon-6/PET; copolyester/PET; copolyester/Nylon-6; copolyester/Nylon-6,6; poly-4-methyl-1-pentene/
15 PET; poly-4-methyl-1-pentene/Nylon-6; poly-4-methyl-1-pentene/Nylon-6,6; PET/polyethylene naphthalate (PEN); Nylon-6,6/poly-1,4-cyclohexanedimethyl (PCT); polypropylene/polybutylene terephthalate (PBT); Nylon-6/co-polyamide; polylactic acid/polystyrene; polyurethane/acetal; or soluble copolyester/polyethylene.
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4. The material according to claim 1, wherein the functional fiber is a Nylon, cellulose-based material, polyvinyl alcohol, superabsorbent fiber, carbon fiber, glass fiber, ceramic fiber, or acrylic fiber.
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5. The material according to claim 1, wherein said material has a density of from about 0.15 g/cm³ to about 0.8 g/cm³.
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6. The material according to claim 5, wherein the density is from about 0.2 g/cm³ to about 0.65 g/cm³.
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7. The material according to claim 6, wherein the density is from about 0.25 g/cm³ to about 0.5 g/cm³.
8. A wicking material comprising a binder fiber adhered to a hydrophilic functional fiber, wherein the binder fiber is a staple monocomponent or bicomponent fiber oriented in substantially the same direction as the functional fiber.
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9. The material according to claim 8, wherein the binder fiber is a polyethylene/PET, polypropylene/PET, or coPET/PET bicomponent fiber.

5 10. The material according to claim 8, wherein the material wicks water at a rate of from about 0.05 to about 1 inch/second.

10 11. The material according to claim 10, wherein the rate is from about 0.1 to about 0.6 inch/second.

10 12. The material according to claim 11, wherein the rate is from about 0.2 to about 0.4 inch/second.

10 15 13. The material according to claim 8, wherein said material comprises from about 1 to about 98 weight percent binder fiber.

10 14. The material according to claim 13, wherein the material comprises from about 5 to about 95 weight percent binder fiber.

20 15. The material according to claim 14, wherein the material comprises from about 5 to about 50 weight percent binder fiber.

10 16. The material according to claim 8, wherein said material comprises from about 5 to about 70 weight percent functional fiber.

25 17. The material according to claim 16, wherein the material comprises from about 5 to about 55 weight percent functional fiber.

30 18. The material according to claim 17, wherein the material comprises from about 10 to about 40 weight percent functional fiber.

35 19. A self-sealing material comprising a binder fiber adhered to a superabsorbent fiber, wherein the binder fiber is a staple monocomponent or bicomponent fiber oriented in substantially the same direction as the superabsorbent fiber.

20. The material according to claim 19, wherein the bicomponent binder fiber is polyethylene/PET, polypropylene/PET, or coPET/PET.

21. The material according to claim 19, wherein the superabsorbent fiber is
5 polyacrylic acid.

22. The material according to claim 19, wherein said material comprises from about 30 to about 95 weight percent binder fiber.

10 23. The material according to claim 22, wherein the material comprises from about 45 to about 95 weight percent binder fiber.

24. The material according to claim 23, wherein the material comprises from about 60 to about 90 weight percent binder fiber.

15 25. The material according to claim 19, wherein the material comprises from about 5 to about 70 weight percent functional fiber.

20 26. The material according to claim 25, wherein the material comprises from about 5 to about 55 weight percent functional fiber.

27. The material according to claim 26, wherein the material comprises from about 10 to about 40 weight percent functional fiber.

25 28. A bioabsorbent material comprised of a binder fiber adhered to a bioabsorbent fiber, wherein the binder fiber is a staple monocomponent or bicomponent fiber oriented in substantially the same direction as the bioabsorbent fiber.

29. The material according to claim 28, wherein the binder fiber is PE/PP
30 polyethylene/PET, polypropylene/PET, or coPET/PET bicomponent fiber.

30. The material according to claim 28 wherein the bioabsorbent fiber is glass fiber, ceramic fiber, or hydrophilic Nylon.

31. The material according to claim 28, wherein said material comprises from about 30 to about 95 weight percent binder fiber.

32. The material according to claim 31, wherein the material comprises from
5 about 45 to about 95 weight percent binder fiber.

33. The material according to claim 32, wherein the material comprises from about 60 to about 90 weight percent binder fiber.

10 34. The material according to claim 28, wherein the material comprises from about 5 to about 70 weight percent functional fiber.

35. The material according to claim 34, wherein the material comprises from about 5 to about 55 weight percent functional fiber.

15 36. The material according to claim 35, wherein said material comprises from about 10 to about 40 weight percent functional fiber.